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PROJECT 9536

W. D. Gilbert 12985 17608

FILE T. S.

Route List

1. *Phillips*
2. *Phillips*
3. *Phillips*
- 4.
- 5.

DATE 10-22-46

SUBJECT ESTIMATE OF LIFE OF MANUFACTURING
FILES

TO THE AREA ENGINEER

FROM W. H. MILTON, JR.

COPY NO. 5-A

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<i>E. B. Montgomery</i>	<i>Sept 1, 1953</i>
<i>W. H. Gilbert</i>	<i>8/21/62</i>

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By Authority of *E. J. Paul* October 22, 1946

Director, Div. 2, Hq. 4, 22-55

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THE AREA ENGINEER
HANFORD ENGINEER WORKS

By *Lydia H. Jensen*
5-3-46

By Authority of *CG-PR-2*

Ch. H. Hagen 12-3-41

Wm. E. Eck 10-20-92
J. H. Wall 10-21-92

ESTIMATE OF LIFE OF MANUFACTURED PILES

Your letter of September 9, 1946

It is believed that the pile condition which will prevent further operation will be encountered when it is no longer possible to charge and discharge slugs from process tubes. This condition may prevail in the top central tubes loaded with 8-inch slugs after about 250,000 MWD of operation, but it is expected with reasonable assurance that the pile life can be extended to about 450,000 MWD by use of 4-inch slugs.

This value of 450,000 MWD should be considered the probable life of a pile. While it is conceivable that this life could be extended by various means such as roasting, by that time unforeseen phenomena may have appeared such that further efforts to maintain the pile could not be justified.

The principal pile condition which will require earlier repairs but which will not permanently impair operation will be the failure of process tubes in consequence of the end-wise expansion of the graphite. It is believed that most of the tubes of the pile will require replacement after 250,000-300,000 MWD of operation. This replacement would suffice to last well beyond the probable life of the pile, tube failure being expected again after 500,000 to 600,000 MWD. Other repairs would be comparatively minor in nature, and would involve items such as special shielding around cracks opened by the graphite expansion and possible replacement of a few vertical thimbles near the sides of the pile.

It is estimated by the Maintenance Department that the pile could be entirely re-tubed during a shut-down of not more than three months. The equivalent of an additional month of irregular shut-down may be involved in replacement of a few tubes which rupture prematurely, and in handling the minor repairs mentioned above.

~~TOP SECRET~~

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It should be noted that we do not as yet have a perfectly clear picture of the mechanism, extent, or consequences of the observed binding of gun-barrels. Our present concept, however, leads us to believe that gun-barrel binding will not prove to be a limiting factor in pile life.

W. H. MILTON, JR.
ADMINISTRATOR

ABG:rd

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